

# Extracting the incentives: vaccination behavior as a multi-criteria decision



## Introduction

- **Vaccine hesitancy, refusal** and disproportional perceptions of vaccine-related side-effects (VRSE) threaten high vaccination coverages.
- Lack of **data** on individual's vaccination decisions.

## Objectives

- Empirical assessment of the "vaccination black box" for individuals in Flanders, Belgium.
- Evaluating vaccination decisions for **themselves** and for their **children**.
- Verify whether/how people influence each other's vaccine decisions (peer pressure or free riding?)

## Methods

- A **discrete choice experiment (DCE)** consisting of vaccine profiles with a Bayesian D-efficient design [1], surveying 1919 individuals in Flanders.
- Vaccine profiles consist of 6 attributes with differing levels (see figure 1).

Attribute	Attribute levels
Vaccine effectiveness	50% 90%
Burden of disease	Rare & Mild Rare & Severe Common & Mild Common & Severe
VRSE	Common Rare
Accessibility	Free & Available Co-payment & prescription
Local coverage	30% 60% 90%
Global coverage	30% 60% 90%

Figure 1: Attributes and attribute levels included in the DCE design.

Vaccine A	Vaccine B
Protects 50% of vaccinated persons	Protects 50% of vaccinated persons
The disease, against which the vaccine protects is rare and often mild: hospitalisation is exceptional and the disease is not life-threatening.	The disease, against which the vaccine protects is rare and often mild: hospitalisation is exceptional and the disease is not life-threatening.
Side-effects are rare	Side-effects are common
The vaccine is not reimbursed and is only available with a prescription	The vaccine is not reimbursed and is only available with a prescription
60% of your acquaintances (friends and family) is already vaccinated	30% of your acquaintances (friends and family) is already vaccinated
30% of the general target population is already vaccinated	90% of the general target population is already vaccinated

Figure 2: Example of one choice set where the respondent is asked to reveal its preferred vaccine profile.

## Results

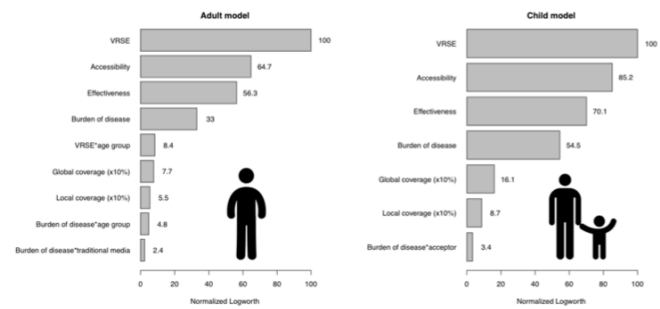


Figure 3: Attribute importance for Adult model (left) and Child model (right)

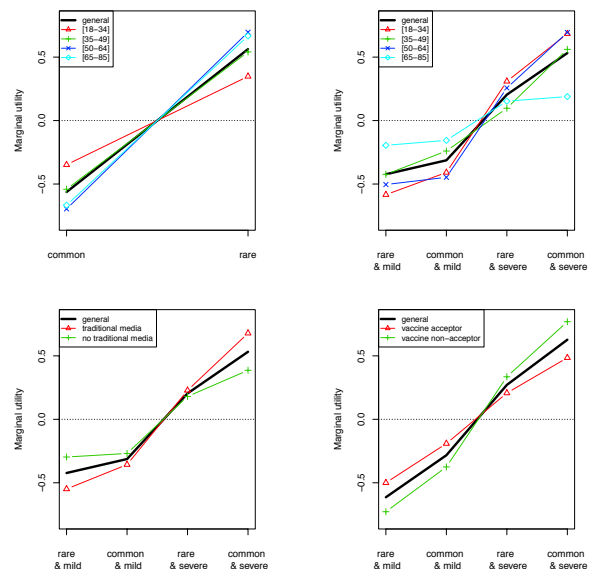


Figure 4: Preference heterogeneity for VRSE and age group for adult model (upper left); burden of disease and age group for adult model (upper right); burden of disease and selection of traditional media as a source of information for infectious diseases and corresponding prevention measures (lower left); burden of disease and respondent identified as 'vaccine acceptor' (lower right) for child model.

## Conclusion

- **VRSEs, availability & reimbursement, vaccine efficacy and burden of disease** are essential attributes in individuals' decisions.
- We did **not observe free-riding** on herd-immunity
- People consider the same criteria in similar ways to decide about their own or their child's vaccinations.

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## References

[1] Kessels R, Jones B, Goos P. Bayesian optimal designs for discrete choice experiments with partial profiles. Journal of Choice Modelling. 2011 Dec 31;4(3):52-74.